DOCUMENT RESUME

ED 339 433 JC 910 574

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TITLE Mathematics, Engineering, Science and Achievement: Pre-College Program for Minority Students. Glendale Community College Report for 1990-91 Educational Year.
INSTITUTION Glendale Community Coll., Ariz.
PUB DATE 91
NOTE 31p.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; Academic Persistence; Awards; College Bound Students; *College Preparation; *College School Cooperation; Community Colleges; Engineering Education; Higher Education; High Schools; High School Students; *Minority Groups; Peer Teaching; Scholarships; *Science Careers; Science Education; State Programs; Student Characteristics; Two Year Colleges
IDENTIFIERS *Arizona; *Mathematics Engineering Science Achievement Prog

ABSTRACT

The Mathematics, Engineering, Science, and Achievement (MESA) pre-college program was developed and implemented at Glendale Community College (GCC) in 1984. GCC's program is part of a statewide effort in Arizona to increase the number of under-represented minority students who complete high school with a foundation in mathematics, science, and English so that they can enter and graduate from college in a math/science-based field. Coordinated at three postsecondary sites (GCC, the University of Arizona, and South Mountain Community College), the program involves over 500 students from 10 high schools in the state. Aside from providing participating students with a special high school curriculum of college-preparatory courses, the MESA program includes peer tutoring; field trips; guest speakers from math/science related fields; incentive scholarships; recognition awards; and student development workshops and seminars. A faculty advisor from each high school recruits and selects students for the program by examining test scores, interviewing the students, reviewing faculty and counselor recommendations, and considering parental requests. The operational costs for the program at GCC are provided by industry and corporate contributions, while administrative costs are covered by in-kind contributions from both GCC and the local high schools. Program findings include high levels of persistence in the MESA program and high levels of college enrollment by MESA students. A review of GCC program activities for the 1990-91 school year; data tables detailing the characteristics of students enrolling in the program since 1984; college enrollment statistics; and a curriculum guide are included. (PAA)

ED339433

Mathematics, Engineering, Science and Achievement Pre-College Program for Minority Students (M.E.S.A.)

By
Jose Mendoza

Glendale Community College
Glendale
Arizona

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MATHEMATICS, ENGINEERING, SCIENCE AND ACHIEVEMENT
PRE-COLLEGE PROGRAM FOR MINORITY STUDENTS
GLENDALE COMMUNITY COLLEGE
REPORT FOR 1990-91 EDUCATIONAL YEAR

Director: Jose Mendoza

Administrative Dean: Jean Abel, Business and Technology

BACKGROUND INFORMATION ON M.E.S.A. PROGRAM DEVELOPMENT

The Mathematics, Science, Engineering and Achievement Pre-College Program at Glendale Community College was developed and implemented in 1984. Initial technical assistance for the Program was provided by a representative of the National Action Council for Minorities in Engineering (N.A.C.M.E.) and initial funding by the Hewlett Packard Foundation and the Lawrence Hall of Science at the University of California at Berkeley.

School districts and Glendale Community College representatives conducted meetings to discuss the program model, the parameters of the program components and services, the curriculum intent, and the commitments that needed to be made to establish the program and the educational partnerships. The discussions centered around the ideal program model, which was to have a designated M.E.S.A. Class in the school curriculum, release of an assigned faculty member for one teaching period per day to develop and implement the M.E.S.A. class and a school-year curriculum. The higher education role and extent of commitment to the Program was generally agreed upon considering the M.E.S.A. MODEL. It was agreed that school districts, Glendale Community College, and the Industry resources would establish the Program and implement it.

PROGRAM OBJECTIVE

The general guiding objective which sets the intent of the M.E.S.A. Program, is:

- To increase the number of under-represented minority students (under-represented in higher education and the professions), who graduate/complete high school/secondary education with the foundation in mathematics, science and English to be able to enter college and graduate in math-science based field/disciplines at the college/university level.

Further and more defined objectives for the M.E.S.A. Program are as follows:

- To continue to develop the M.E.S.A. Program to have the maximum impact on the development of minority students and their preparation for college.

- To continue to build the capacity of the school offering the M.E.S.A. Program to be able to address the educational challenges of cultivating a minority student population who enroll in pre-college high school programs intended to prepare students for college.

- To continue to enhance the program capacity of the M.E.S.A. Program by providing resources and direction by the college site and the State of Arizona "M.E.S.A."

- To continue to graduate minority students and assure their college enrollment and educational attainment and progress.

ORGANIZATIONAL STRUCTURE OF M.E.S.A.

The M.E.S.A. Program is part of a state structure and is coordinated within the M.E.S.A. Pre-college Concept and Program Intent.

There is a State Industry Advisory Board, comprised of industry representatives, which are company designated to participate in general advisory roles for "Arizona M.E.S.A." The companies have contributed funds and in-kind support for the Statewide operations of M.E.S.A. The role of the Industry Advisory Board is to set Policy Direction and Program Intent for the Arizona M.E.S.A. Programs as to the program model, the general objectives, the program services and activities, and the general components of the Program. The Board is also responsible for soliciting companies and industry to contribute resources to Arizona M.E.S.A. for general operations and Program needs.

The State Industry Advisory Board has a full-time Executive Director who reports to the board and oversees the overall operations of the M.E.S.A. Programs in the State of Arizona. The State Director is the primary spokesperson, provides program guidance and direction, oversees the central clearinghouse for program reports and data. The fiscal resources are centered at the Statewide M.E.S.A. Office, presently located at South Mountain Community College and are distributed/allocated according to the Industry Advisory Board Direction. In addition, special requests and technical assistance are considered and acted upon by the State Director.

PARTICIPATING SCHOOLS IN ARIZONA M.E.S.A.

There are ten schools participating in the M.E.S.A. Program: five schools in the City Of Tucson (Pueblo, Cholla, Tucson, Catalina, and Rincon), under the college site coordination of the University of Arizona for their program implementation and support. South Mountain Community College coordinates two schools (Carl Hayden and South Mountain High Schools).

Glendale Community College coordinates three schools (Peoria, Tolleson, and Dysart). All together, there are over five hundred students participating in the M.E.S.A. Program.

DEVELOPMENT EFFORTS

There are efforts underway to expand and enhance the Arizona M.E.S.A. Programs. There are discussions in Northeastern Arizona in the Navajo Nation, the Hopi Tribe, Northern Arizona University and schools in Flagstaff, developmental efforts in Maricopa County at Tempe and Marcos De Niza High Schools, Central Arizona and Casa Grande High School, and the possibility of added schools in the Tucson area. Resources from industry are being expanded in order to continue the growth and development of Arizona M.E.S.A.

COLLEGE AND SCHOOL STRUCTURE OF M.E.S.A.

The college site is the higher education resource that helps direct the implementation of the M.E.S.A. Program. The college site provides the Program Director/Coordinator, the college office for M.E.S.A., and directs the resources/funds to the high school sites and provides general overall program direction. The continued development and enhancement of the program is coordinated out of the college site. In addition, the participant records and program files are centrally located at the college site. Program planning for the M.E.S.A. calendar year is administered from the college site office. Field trip coordination is administered out of the college site, as are speakers, program tutoring needs, and processing of incentive scholarships. A major aspect of the college site is to provide any/all of the materials and supplies which the high school sites require to implement the curriculum/program requirements.

SCHOOL CONTRIBUTIONS TO M.E.S.A.

The participating schools have made a major contribution to the program through release time for members of their faculty to be the designated faculty advisors for M.E.S.A. This is a major contribution, as one-sixth or one-third release time amounts to a major commitment by the schools to the program. The schools also

allocate travel time, added materials, staff development, and the M.E.S.A. classroom. In all sites, the Assistant Principal for Curriculum, and high school counseling offices are involved and contribute time, input and resources to the M.E.S.A. program.

The faculty advisors play a major role in implementing the M.E.S.A. curriculum and conducting the M.E.S.A. class at the school sites. They set the calendar-school year curriculum plan, develop the lectures and activities, and guide the student development of the M.E.S.A. students. In addition, the faculty advisors initiate requests for funds/resources as needed for the program. They also maintain the class rosters, the evaluation

and grade books, and submit the necessary forms/paperwork for the incentive scholarships, assist in setting up field trips and speakers for the school sites.

THE M.E.S.A. STUDENT ROLE AND EXPECTATIONS

The M.E.S.A. students are the focal point for the Program. The students are expected to be enrolled in the college preparatory curriculum at their high school, be continuously enrolled in math, science and English classes, and make steady educational progress in the M.E.S.A. stated objectives. The students are enrolled in the M.E.S.A. class, complete the class assignments, participate in the M.E.S.A. activities (speakers, field-trips, and academic competitions). The activities and requirements of the M.E.S.A. program are demanding for the students, but are intended to assure educational attainment in preparation for college.

M.E.S.A. PROGRAM MODEL

The M.E.S.A. Pre-College Program has developed the program emphasis and curriculum content based on educational principles that work to fully develop the student for college and include:

- Requiring academic coursework (Algebra, Trigonometry, Biology, Chemistry, Physics, and English) that will provide the educational foundation and opportunity for M.E.S.A. students to enter math/science-based college educational programs and succeed.

- Providing incentives that recognize and reinforce academic performance, especially in the college preparatory courses in math, science and English.

- Building a cooperative network of institutions (public schools, colleges, universities, industry, professional societies, and business) which provide individual or group (in-kind) resources to support the students in the Program.

- Creating a sense of community and purpose among the M.E.S.A. students, parents, teachers, school administrators, and program personnel.

- Measuring, evaluating, upgrading, and enhancing the program on an ongoing and annual basis.

- Emphasizing student development of the M.E.S.A. students to be able to have well-rounded educational skills.

M.E.S.A. PROGRAM SERVICES AND ACTIVITIES

M.E.S.A. provides the participating students with activities that are designed to enrich and enhance their regular college preparatory high school program. The activities/services are as follows:

- **Tutoring:** Advanced M.E.S.A. students serve as peer tutors, while college students tutor and serve as role models for the students. The main objectives are to improve the understanding of mathematic and scientific concepts, to maintain educational success, and to assure higher grades.

- **Field Trips:** Visits to industrial plants, colleges, universities, research centers, and other facilities are for the purpose of providing M.E.S.A. students with input and information about technical and other professions and to increase the understanding of the educational requirements to pursue professional careers.

- **Speakers:** Professionals from all the math/science and related career fields who speak and relate to the students are to reinforce an understanding of what is required to obtain a professional degree as it relates to classes/coursework, attitude, degree of commitment, motivation, planning strategies, and career development.

- **Science Projects/Special Projects:** Special activities designed to enhance an understanding of math/science concepts. Special projects and activities to generate actual application of math and science concepts. Projects to assure much more of an understanding of cultural diversity, research and writing, vocabulary development, career development, computer competency, study skills, and preparation for college entrance examinations.

- **Scholarship Incentive Awards:** For recognition and reinforcement for high grades in math, science, and English.

- **Computer Software:** To enhance the educational program and the preparation for College Entrance Examinations and national tests which measure college preparation.

- **Student Development:** Projects, activities, workshops and seminars designed to enhance the M.E.S.A. students' experiences and educational foundation. This can also be college classes, summer institutes or seminars.

STATISTICAL AND PROGRAM INFORMATION ON THE M.E.S.A. PROGRAM

Target Group of The M.E.S.A. Program

The program is targeted to the ethnic group high school students who continue to be under-represented in higher education, the professions, and the technical fields. This targeting of resources is according to the established definition of the National Action Council for Minorities in Engineering, in New York City, who has membership and financial contributions from the largest and most prominent high technology firms/companies in the country. Therefore, the program targets Hispanics, Blacks, and Native-Americans.

Grade Levels And Student Selection for the Program

The program participants are in the 1st, 2nd, 3rd, and 4th grade levels in high school. The program requirements and objectives are different for the different grade levels, and depend on the necessary educational development of the students.

The faculty advisor recruits and selects students for the program. The faculty advisor reviews tests scores, interviews students, receives faculty and counselor recommendations, considers parental requests on behalf of students, and eventually determines the actual M.E.S.A. students/participants. The Program is limited on the basis of how many students can be served by one or two classes at Peoria High School. There are out-of-class M.E.S.A. students who comply with certain stated program requirements of M.E.S.A. under the supervision of the faculty advisors for continued program participation.

PROGRAM FUNDING RESOURCES

The program is funded by industry and corporate contributions. Glendale Community College provides in-kind contributions to administer the program. The School Districts provide the faculty release time to implement the program (plus registration coordination, classroom space, some materials, some transportation

and other staff support). Industry resources provide the operational funds for the program, which include company donations and foundation support. The American Honda Foundation, through Arizona State University, Project Prime (a developmental program to improve minority education) has contributed funds to enhance Maricopa County M.E.S.A. Programs at Glendale Community College and South Mountain Community College. Recently, officials of American Honda have given the approval to Project Prime to develop added M.E.S.A. programs on a statewide level/basis.

FACULTY AND STUDENT DEVELOPMENT

Students, faculty advisors, and the college-site directors are provided the opportunity and resources to attend classes, workshops, seminars, and institutes designed to enhance the M.E.S.A. Programs activities and objectives.

HIGHLIGHT OF ACTIVITIES

Faculty and Student Development

- July, 90: Field trip; faculty/student development, leadership development, four students and faculty advisor from Peoria High School, at Colorado State University

- July, 90: Master Student-"Be Here Now", San Francisco, CA., faculty advisor, Tolleson High School

Faculty development/Site Director, August 23-26, 1990, San Ramon, CA., California M.E.S.A., Faculty Advisor Conference. Dysart and Peoria High School advisors were unable to attend due to faculty accountability mandate. Arizona participants were hosts of the California M.E.S.A. Program.

- Two high school credit classes, Estrella Community College Center,Tolleson High School, Spring 1991.

- Student Summer Institutes: one student-ASU five-week Science Camp, two students-University of Arizona Engineering Institute, three students-Arizona State University Business Institute,three students-Engineering Institute-Arizona State University, with the possibility of two additional students, all from Dysart High School.

ADDED ACTIVITIES:

- On-site tutoring, all school sites, SPECIAL EMPHASIS at Dysart High School with after school tutoring.

-Parent orientation sessions, Peoria High School, 9-9-91

-Club status, Peoria and Dysart High Schools

-PSAT/SAT, ACT testing, all three sites

-Class/concurrent enrollment

ADDED HIGHLIGHTS

- Fred Easter, State Director for California M.E.S.A., 11-7&8-91.

- N.A.U. field trip Dysart/Tolleson (fall),10-26-91

- Field Trip, Grand Canyon University, Tolleson High School, 11-16-91.

- Leadership Retreat, 3-22-24, 1991, selected students from all three sites.

- U of A field trip, Tolleson High School (spring) (Dysart was forced to cancel due to school activity)

- Museum of Science and Technology, Dysart (spring)

- M.E.S.A. "Fun Day" G.C.C. (fall)10-20-91

- Leadership Saturday Academy G.C.C. (fall)10-7-91

- Industry Dinner, Jane Goodall, noted scientist,Selected students from each site, Arizona Biltmore, sponsored by Honeywell.

- M.E.S.A. Day Competition, 4-20-91, Tolleson High School Science Bowl Champions, Dysart High School, Science Bowl runners-up. (competition with ten M.E.S.A. schools in Arizona)

- M.E.S.A students were key members in the West Valley Academic Competition at Cactus High School.

- End-of-Year Recognition Reception, 5-18-91, ASU West.

AWARDS GIVEN

- 101 percent award, NON-SCHOOL DAY PARTICIPATION IN M.E.S.A ACTIVITIES & PROGRAMS DYSART HIGH SCHOOL

- TOLLESON HIGH SCHOOL, SCIENCE BOWL ACADEMIC COMPETITION, "M.E.S.A." Day, SMCC. CHAMPIONS, COMPETITION WITH ALL TEN ARIZONA M.E.S.A. SCHOOLS

- DYSART HIGH SCHOOL SCIENCE BOWL ACADEMIC COMPETITION RUNNER-UP, COMPETITION WITH ALL TEN ARIZONA M.E.S.A. SCHOOLS

PEORIA:

MOST IMPROVED FRESHMEN.....MIKE ALCANTAR
OUTSTANDING FRESHMAN.....LAURA MARTINEZ
OUTSTANDING SOPHOMORE.....SELINA CANTY
MOST IMPROVED.....RICHARD URIAS
MOST IMPROVED JUNIOR.....JENNI BURRELL
OUTSTANDING JUNIOR.....ANGEL COTA
OUTSTANDING MALE.....ANGEL COTA
OUTSTANDING FEMALE.....SELINA CANTY

DYSART:

MOST IMPROVED FRESHMAN.....CLAUDIA CHAVEZ
OUTSTANDING FRESHMEN.....ANNA CHAVEZ
MOST IMPROVED SOPHOMORE.....CHRISTOPHER VILLARREAL
OUTSTANDING SOPHOMORE.....FERMIN RIVERA
MOST IMPROVED JUNIOR.....LUPANO MACIAS
OUTSTANDING JUNIOR.....MARIA CAMACHO
OUTSTANDING MALE.....ELI ORTEGA
OUTSTANDING FEMALE.....NIDIA FLORES

TOLLESON:

OUTSTANDING SOPHOMORE.....VANESSA PINA
OUTSTANDING SOPHOMORE.....RICK CHAIREZ
OUTSTANDING JUNIOR.....NATASHA NEAL
OUTSTANDING JUNIOR.....MIKE BOUCHARD
OUTSTANDING SENIOR.....ANJELINA BARRAZA
OUTSTANDING SENIOR.....LAMONT HUTCHINSON
MOST IMPROVED STUDENT 1991...MARIA GONZALEZ
ACADEMIC EXCELLENCE,1ST YEAR.NATASHA NEAL
ACADEMIC EXCELLENCE.....MIKE BOUCHARD

M.E.S.A. SENIOR SCHOLARSHIPS:

TOLLESON HIGH SCHOOL:

MARIA GONZALES	ANJELINA BARRAZA
MELANIE WORKER	BELINA MALTOS

PEORIA HIGH SCHOOL:

SANDRA ESTRADA	CLAUDIA ESTRADA

DYSART HIGH SCHOOL:

NIDIA FLORES	AARON GOMEZ
JAMIE GARCIA	VALERIE SAINZ

PROGRAM PARTICIPANTS FOR THE 1990-91 EDUCATIONAL YEAR

The total Program Participants for the 90-91 educational year, are as follows:

Tolleson High School.....42

Dysart High School.....44

* Peoria High School.....Fall 42..Spring..26

* At the beginning of the school year, there were 42 students enrolled in one M.E.S.A. class. This was a difficult situation for the faculty advisor, due to the program curriculum and its need to address the educational needs of the students. Therefore, there were negotiations with Peoria High School officials to open up an additional class section for the Spring Semester. This did occur; however, with a class added in mid-year, this caused some educational scheduling problems and dropped the enrollment in the two classes to 26 for the Spring Semester. This situation will be monitored to assure adequate enrollment for two class sections for the upcoming year.

Of the number of students enrolled/participating, there were:

Minority male students.....55

Minority female students.....81

The ethnic breakdown of the M.E.S.A. students is as follows:

Black.....10

Hispanic.....102

Native-American.....1

The Grade levels of the M.E.S.A. students are as follows:

Ninth grade.....20

Tenth Grade.....31

Eleventh Grade.....36

Twelfth Grade.....22

CURRICULUM DESIGN, PROGRAM ACTIVITIES AND OUTCOMES OF THE PROGRAM

The schools do have a designed curriculum and activities that reinforce the curriculum objectives (See attached curriculum guide). The implementation of the M.E.S.A. Program covers the one-hundred eighty days of the school year with set guidelines, criteria, and necessary minimums for program participation.

The outcomes expected of the Program are as follows:

- That students are regularly enrolled in the pre-college curriculum at their high school site.

- Students are attaining levels of educational success in their high school courses.

- Students are more aware of the opportunities in higher education and the career fields that have college degrees as a requirement.

- Students will work to achieve educational excellence and their highest potential as a student.

- Students will have school experiences in math, laboratory sciences, computers, and English.

- Students will automatically register and take national tests for college entrance.

- Students will work closely with the faculty advisor to monitor their educational progress in the program.

- Students will involve their parents in their educational development for the purpose of increased support for the personal educational objectives and aspirations.

- Students will have in-place educational plans which include college as a goal.

MAJOR FINDINGS ABOUT STUDENTS/PARTICIPANTS IN THE M.E.S.A PROGRAM

The M.E.S.A. Program does have an impact on the participating students and the school environment. The school is also the beneficiary of more minority students participating in their academic mainstream classes in preparation for college. The findings of the program indicate the following:

- There are high levels of college enrollment by M.E.S.A. students.

- There are high levels of educational persistence/ sustainment in the program in the schools. (Very few students actually leave the program once enrolled.)

- There is a highly visible personal and educational growth in the M.E.S.A. students.

- There are increased levels of awareness of the attributes of the program in the school environment by the students, faculty members and administrators.

ELEMENTS THAT CONTRIBUTE TO THE SUCCESS OF THE M.E.S.A. PROGRAM

The M.E.S.A. Program is successful in the school sites due to the following factors:

- A visible support by the Assistant Principals for curriculum and school administrators.

- The curriculum, course requirements, and school year implementation do provide educational challenges, and results in growth in student development.

- The built-in incentives act as a catalyst for increased educational effort/attainment reinforcement.

- The frame of reference for decision-making by the M.E.S.A. students is based on college preparation and careers that will require college as a requisite.

PROGRAM EVALUATION MODEL/PROCESS

The program is part of an on-going process to upgrade and provide the educational experiences and support to foster preparation for college. Therefore, the program takes into consideration program data to assess the overall effectiveness of the program and considers:

-Pre and post enrollment in the program per grade level

-Educational enrollment in pre-college courses

-Student growth and development (educational progress)

-Graduation and college enrollment numbers

-Review of continued enrollment in college

The Evaluation process includes the students, the faculty advisors, input by the parents, the College Site Director, school officials, the Administrative Dean, the State Governing Body, and the Industry Advisory Board.

Data collected as a part of the M.E.S.A. files include the high school transcripts, the participating student files, grade reports, and inclusive national test results.

FOLLOW-UP OF PARTICIPATING STUDENTS, PAST AND PRESENT

The students contacted indicated that M.E.S.A. helped provide the proper focus and atmosphere for college preparation. The enrolled college students indicated that M.E.S.A. was the principal reason they are in college today and achieving success.

NECESSARY PROGRAM DEVELOPMENTS FOR M.E.S.A. TO CONTINUE TO GROW, DEVELOP, AND CONTINUE TO MEET THE NEEDS OF THE STUDENTS

The M.E.S.A. Program does have a proven track record of continuous success. It does seem to be the proper programmatic process and it is focusing on the areas that need resource support and added attention in the public schools. However, there are elements/components that need increased resources and program efforts. The added program developments necessary are:

- Increased usage of computers to support the academic program and endeavors of the students. This should include student access to up-to-date computers and laboratories, the new software, and programs designed to enhance learning in the pre-college curriculum. Tolleson and Peoria High Schools do not have immediate access to computers to support the educational development of their students. Dysart High School does have computers in their classrooms, but they do require more computers for their students.

- Increased development of the curriculum to continue to enhance an already strong curriculum focus. Continued efforts to segment the curriculum objectives by grade level and years in program.

- Increased resources for overall program studies, to include a study of the enrolled college students who were M.E.S.A. students.

- Increased recognition on a statewide level and the local level on the attributes of M.E.S.A. and its contributions to minority student success.

- Added release time and prep-time for the faculty advisors to have adequate resources to implement the program.

- Added administrative and department recognition of program efforts in M.E.S.A. in the school sites.

- Tolleson High School does have a fifty-one per cent minority student population. Dysart High School has a seventy-five per cent minority population. This is indicative of the potential to add additional class sections of M.E.S.A. to have more of an impact on more students. (Some California schools have two, three and even four sessions of M.E.S.A. classes, as schools see it as invaluable to cultivate their minority population into the pre-college curriculum.) This should by considered by the schools as an objective of the system.

- Increased participation by some school site students in non-school day activities and enrichment programs to add to their overall student development.

ADDITIONAL INFORMATION ON M.E.S.A. DEVELOPMENT EFFORTS

There is renewed interest and support by local industry and government entities towards the M.E.S.A. Program. Recently, in April 1991, various new companies have joined as official partners in becoming industry donors to the statewide Arizona M.E.S.A. Program. American Honda, the principal funding source for the Glendale Community College and South Mountain programs, has provided increased resources to expand further M.E.S.A. efforts. At present, there are various state high schools prepared to enter the network of M.E.S.A. Programs. The schools in development are: Window Rock High School in the Navajo Nation, Central and Tempe High Schools in the Phoenix Metropolitan area, and possibly one or two schools in the Flagstaff area. There are other sites currently drafting plans to become official M.E.S.A. Programs throughout the state and within the Metropolitan area.

GLENDALE COMMUNITY COLLEGE ENROLLMENT OF M.E.S.A. STUDENTS: 1984-91

	HIGH SCHOOL	TOTAL	MALE/ FEMALE		GRADE LEVE 9	10	11	12	RACIAL/ETHNIC GROUP B	H	AI	OTHER
1984-85												
	DYSART	15	7	8	6	6	3	0	2	13	0	0
	PEORIA	7	3	4	1	4	2	0	4	3	0	0
	TOLLESON	*No Program										
	GLENDALE	29	18	11	12	4	11	2	2	27	0	0
	TOTALS	51	28	23	19	14	16	2	8	43	0	0
1985-86												
	DYSART	22	10	12	9	5	7	1	1	20	0	1
	PEORIA	3	1	2	2	0	1	0	1	2	0	0
	TOLLESON	18	10	8	0	12	1	5	1	16	0	1
	TOTALS	43	21	22	11	17	9	6	3	38	0	2
1986-87												
	DYSART	28	11	17	7	8	5	7	4	23	0	0
	PEORIA	*Break in Program/ Advisor Transferred										
	TOLLESON	12	6	6	0	4	8	0	4	8	0	0
	TOTALS	40	17	23	7	12	13	7	8	31	0	0
1987-88												
	DYSART	34	15	19	10	8	9	7	2	32	0	0
	PEORIA	17	7	10	5	8	4	0	2	12	0	5
	TOLLESON	20	6	14	0	15	3	2	11	11	0	0
	TOTALS	71	28	43	15	31	16	9	15	55	0	0

	HIGH SCHOOL	TOTAL	MALE/ FEMALE		GRADE LEVEL 9	10	11	12	RACIAL/ETHNIC GROUP B	H	AI	OTHER
1988-89												
	DYSART	34	16	18	14	6	7	7	2	32	0	0
	PEORIA	17	11	6	9	1	3	4	1	15	0	1
	TOLLESON	20	5	15	0	10	0	10	6	13	0	1
	TOTALS	71	32	39	23	17	10	21	9	60	0	2
1989-90												
	DYSART	40	24	16	12	12	7	9	2	38	0	0
	PEORIA	25	14	11	3	16	1	5	2	23	0	0
	TOLLESON	38	11	27	0	12	18	7	11	26	1	0
	TOTALS	103	49	54	15	40	26	21	15	87	1	0
1990-91 End of Year Enrollment Summary												
	DYSART	44	24	20	12	14	13	5	1	43	0	0
	*PEORIA	(*42)26	14	12	7	13	3	3	2	24	0	0
	TOLLESON	41	18	23		15	23	14	9	34	1	0
	TOTALS	111	56	55	19	42	39	22	12	101	1	0

OVERALL PROGRAM TOTALS: Total Students for Program Duration = 490

Year	Students	Year	Students
1984-85	51	1988-89	71
1985-86	43	1989-90	103
1986-87	40	1990-91	111
1987-88	71		

RACIAL ETHNIC BREAKDOWN OF PARTICIPANTS:

BLACK	70	14.3%
HISPANIC	418	85.3%
AMERICAN-INDIAN	2	.4%

M.E.S.A. GRADUATE REPORT, GLENDALE COMMUNITY COLLEGE
COLLEGE ATTENDANCE UPDATE

HIGH SCHOOL	*No.of Seniors	*Attended College	*Comm. College	*Univ.
1984-85 EDUCATIONAL YEAR				
GLENDALE	2	2	2	
DYSART	0	0	0	
PEORIA	0	0	0	
TOLLESON	NO PROGRAM----------			
TOTAL	**2**	**2**	**2**	
1985-86 EDUCATIONAL YEAR				
GLENDALE	5	5	4	NAU 1
DYSART	1	1	1	
PEORIA	0	0	0	0
TOLLESON	1	1	1	0
TOTAL	**7**	**7**	**6**	**1**
1986-87 EDUCATIONAL YEAR				
GLENDALE	PROGRAMDISCONTINUED----------			
DYSART	7	7	4	ASU 2/NAU 1
PEORIA	NO PROGRAM IN-PLACE/ADVISOR TRANSFER----------			
TOLLESON	0	0	0	0
TOTAL	**7**	**7**	**4**	**3**
1987-88 EDUCATIONAL YEAR				
DYSART	7	7	3	ASU 3/NAU 1
PEORIA	0	0	0	0
TOLLESON	2	2	2	
TOTAL	**9**	**9**	**5**	**4**
1988-89 EDUCATIONAL YEAR				
DYSART	9	9	3	6
PEORIA	4	4	4	0
TOLLESON	0	0	0	
TOTAL	**13**	**13**	**7**	**6**
1989-90 EDUCATIONAL YEAR				
DYSART	9	9	5	4
PEORIA	5/1 U.S.ARMY	4	1	3
TOLLESON	7	7	5	2
TOTAL	**21**	**21**	**11**	**9**
1990-91 EDUCATIONAL YEAR				
DYSART	5	5	3	2
PEORIA	3	2	1	1
TOLLESON	9	9	4	5
TOTAL	**17**	**17**	**8**	**8**
CUMULATIVE TOTALS:	**77**	**75**	**43**	**31**

ADDENDUM

MATHEMATICS, ENGINEERING, SCIENCE, ACHIEVEMENT
(M.E.S.A.)
PRE-COLLEGE PROGRAM
STATE OF
ARIZONA "ARIZONA M.E.S.A."
PROGRAM OVERVIEW AND DEVELOPMENT
SPRING 1991

INTRODUCTION AND HISTORICAL BACKGROUND

'ARIZONA MESA', an acronym that encompasses the main components of a pre-college program effort developed and implemented by the National Action Council for Minorities in Engineering,(MACME) with headquarters in New York City over twenty years ago. The members of M.A.C.M.E. are the top manufacturing and high technology firms/companies in the country. They are represented on the national board by the Chief Executive Officers of designated companies. The principal concern of the industrial/technology oriented companies was the need to assure the adequate educational attainment of the rising minority community to assure the availability and appropriate number of trained employees available to their companies throughout the United States and the world. Therefore, M.A.C.M.E. sponsored scholarship programs in four-year colleges and universities to provide added scholarship support to promising engineering minority students, which they continue to do to this day.

M.A.C.M.E. envisioned the probable obstacles to achieving their desired goals of a college educated minority community and developed PRE-COLLEGE PROGRAMS throughout the country to work with private and public secondary schools to provided added assurances for educational success in the schools and assure themselves of a larger pool of college-ready minority students able to enter and succeed at the college level. M.A.C.M.E. provided technical assistance to develop such programs, especially in highly populated California, where M.E.S.A. has just celebrated their twentieth (20th) year of existence and with resounding successes.

ARIZONA M.E.S.A. PROGRAM

ARIZONA M.E.S.A. pre-college program efforts developed in Arizona in 1983 with implementation in 1984. This program development effort received technical assistance from M.A.C.M.E. and their Southwest Coordinator, Miguel "Mike" Macias. The initial technical assistance efforts were through the Lawrence Hall of Science at the University of California in Berkeley. Initial seed funds were provided by the Hewlett Packard Foundation to help Arizona M.E.S.A. develop and implement their Pre-College Programs. Also, for the first time in the history of M.A.C.M.E., community colleges were brought into the M.E.S.A. network of pre-college programs. Glendale Community College and the University of Arizona jointly developed the initial program proposal to the Lawrence Hall of Science for funding consideration.

Thus, Arizona M.E.S.A. became a reality and exists with high levels of success comparable to the California Programs. Adjoining states, New Mexico, Utah, Colorado, Texas, and Nevada also have in-place M.E.S.A. Pre-College programs, as does the State of Washington. All of the programs have followed the original California model that has proven to be so successful

PROGRAM INTENT

The intent of M.E.S.A. Pre-College Programs are to prepare minority high school students to enter college with the skills necessary for educational success. To accomplish this, M.E.S.A. provides human and fiscal resources towards M.E.S.A. program efforts. Partnerships are developed with school districts, community colleges, the business and industrial community, and four-year colleges, to foster minority student success, program development and implementation. Generally speaking, operational resources have come from industry, although colleges, universities, and the school districts have provided significant monetary and staff support to further the M.E.S.A. program objectives, restated as: "To develop educational program efforts that will provide minority students with the skills necessary to be able to enter college with an educational foundation that is adequate to be achieve success in programs that require a foundation in math, science and English."

Collaborations/partnerships have developed that include the schools, colleges/universities, and business and industry. Added collaborations with the pre-college efforts include: Professional societies, educational administrators at all levels, community organizations, and innovative programs that target the under-represented populations in higher education and the professions, especially the math/science career fields. The conclusion is that the under-represented groups are Black, Hispanic, and American-Indian with those being the groups which the program wants to impact on. This is an important consideration as industry feels strongly that the human and fiscal resources should concentrate on the under-represented populations where they will do the most good or accomplish the most.

PROGRAM POLICY DIRECTION AND ORGANIZATIONAL STRUCTURE

The leadership and policy direction for M.E.S.A. is provided by an INDUSTRY ADVISORY BOARD (IAB), comprised of corporate members that set policy and provide advisory direction for Arizona M.E.S.A. In addition, participation on the Advisory Board also includes educational resource persons, which provide educational input and resources for M.E.S.A. operations. The educational resource persons are representatives from participating educational divisions in higher education. These individuals contribute input and sometimes assume program development and resource development roles with the Industry Advisory Board.

The Board responsibilities include setting the program philosophy, intent, and program objectives and priorities. The primary role is to set policy and cultivate industry resources for M.E.S.A. In addition, comprehensive planning can be a part of the function of the M.E.S.A. Industry Board.

STATE DIRECTOR FOR M.E.S.A.

The State Director for M.E.S.A. has the responsibility to implement policy and Advisory Board recommendations. In addition, the State Director is the spokesperson for Arizona M.E.S.A. as it relates to publicity, disseminating information and any industry contacts which have to be cultivated and informed. The State Director oversees the distribution of funds and resources under the responsibilities of the Industry Board for Programs and activities. The State Director is also responsible for planning for the program and developing a comprehensive fundraising plan for Arizona M.E.S.A.

SITE COORDINATOR/HIGHER EDUCATION SITE

The M.E.S.A. Director at the higher education site is responsible for the necessary assistance to implement the pre-college programs at the schools sites. The College Site Coordinator performs the following tasks:

-Solicits information from school officials, faculty advisors, and students on the M.E.S.A. program needs.

-Processes necessary paperwork and forms for resources necessary for the M.E.S.A. program.

-scholarships -field trip transportation
-enrollment reports/rosters
-incentive scholarships

-Develops and solicits resources needed for the M.E.S.A. Program.

-speakers -materials -field trips
-supplies -equipment -training and development

-Develops reports and prepares material necessary to the M.E.S.A. program.

THE FACULTY ADVISOR ROLE:

The Faculty Advisor for the Pre-College M.E.S.A. Program is the high school teacher assigned to the Program by the school officials. The faculty advisor is released partially from the regular course load to implement the M.E.S.A. Program. The Faculty Advisor has the following responsibilities:

-Assist in the curriculum development for the school site.

-Implements the M.E.S.A. program.

-Identifies and selects students for the program

-Requests necessary resources or services to support the M.E.S.A. program.

-Assesses the program and provides recommendations on the program model, structure, content, and needs.

-Works with M.E.S.A. students individually and in groups to assure their personal and educational development.

-Assures ongoing communication and dialogue with students and College Site Coordinator.

-Becomes involved in development projects to enhance M.E.S.A. student skills and abilities.

-Provides input in program overview and recommendations

PROGRAM TO IMPROVE MINORITY EDUCATION IN ARIZONA (PROJECT PRIME):

Arizona State University, in cooperation/ collaboration with the Arizona Board of Regents, has developed educational program efforts designed to improve minority public school education in Arizona and increase the pool of college-ready minority students able to enter and succeed in college. They have program efforts in Test skills, I have a Dream (resources for college), Financial Aid/Academic Planning, Parents as Partners, Algebridge (Pre-Algebra in junior high school) and to enhance and develop M.E.S.A. Pre-College program efforts on a State wide basis by leveraging and targeting fiscal and human resources towards those efforts.

This Program is presently committed to provide a **Program Coordinator** to assist the State Director with Program Operations on a Statewide Basis. The **Coordinator role** is to provide technical assistance to the higher education program sites and the school sites.

GOALS AND OBJECTIVES FOR ARIZONA M.E.S.A.

Again, the GOAL of Arizona M.E.S.A. is develop and implement program efforts that will increase the number of minority and economically disadvantaged students who graduate from high school with the educational foundation in math, science and English, and are able to enter Arizona Colleges or universities and successfully graduate with degrees in math/science based fields/disciplines.

The **OBJECTIVES** for Arizona M.E.S.A. are:

-To develop pre-college program efforts that will target under-represented minority students and provide added assurances for educational success in math, science and English.

-To utilize program resources to positively affect the academic preparation of minority high school students to prepare them for college.

-To inform and involve Arizona technical industry about M.E.S.A. Program efforts to assure adequate industry resources and a responsiveness to a changing technical industry and economy.

-To actively involve Arizona community colleges and universities to ensure that M.E.S.A. is responsive to the requirements of the post-secondary system and to the development of college/university resources for M.E.S.A.

-To develop a comprehensive planning document that will help guide the growth and development of M.E.S.A. and coordinate with other similar efforts and programs.

MATHEMATICS, ENGINEERING, SCIENCE AND ACHIEVEMENT
PROGRAM COMPONENTS

BACKGROUND, RATIONALE AND PROGRAM SERVICES

The Pre-College M.E.S.A. Program has program requirements to maintain active participation in the program. Students are expected to make the COMMITMENT NECESSARY for educational attainment. In turn, the M.E.S.A. Pre-College Program provides supportive services to the participants to foster their educational development. The services and Program content include:

-A **STRUCTURED CURRICULUM** WITH CONTENT/REQUIREMENTS INTENDED FOR PRE-COLLEGE PREPARATION.

-**TUTORING** SERVICES PROVIDED BY HIGH SCHOOL STUDENTS, THE FACULTY ADVISOR, OR COLLEGE TUTORS TO HELP STUDENTS WITH SUBJECT AREAS IN WHICH HELP IS NEEDED OR REQUESTED.(AT PROGRAM EXPENSE...)

-**FIELD TRIPS** TO EDUCATION OR INDUSTRY SITES WHICH WILL REINFORCE THE IMPORTANCE OF EDUCATION AND MATH, SCIENCE AND ENGLISH SKILLS.

-**GUEST SPEAKERS** WHO ARE ROLE MODELS AND CAN COMMUNICATE TO STUDENTS ABOUT THE SKILLS NEEDED FOR CERTAIN PROFESSIONS, AS WELL AS INSPIRE AND MOTIVATE STUDENTS FOR EDUCATIONAL SUCCESS.

-**INCENTIVE SCHOLARSHIPS**-ACTUAL MONETARY AWARDS PROVIDED TO STUDENTS FOR TOP GRADES IN ENGLISH, MATH AND SCIENCE COURSES.

-**RECOGNITION EVENTS** TO RECOGNIZE AND ACKNOWLEDGE EDUCATIONAL EXCELLENCE AND COMMITMENT TO THE PROGRAM OBJECTIVES.

-**SCHOLARSHIPS** TO GRADUATING SENIORS ON A COMPETITIVE BASIS (NEED, ACADEMIC LEVEL, AND PROGRAM MAJOR/INTENT)

-**BOOKS, TEXTS, MATERIALS,** SOFTWARE, AND HANDOUTS FOR ACTUAL CLASSROOM USAGE.

-**STUDENT DEVELOPMENT** ACTIVITIES-WHERE STUDENTS CAN ATTEND WORKSHOPS, CONFERENCES, SEMINARS, AND CLASSES AT PROGRAM EXPENSE.

-**PROGRAM ACTIVITIES** DESIGNED TO REINFORCE AND CLARIFY MATH/SCIENCE CONCEPTS OR RELATED PROGRAM MATERIAL.

-ADDED AND **ENRICHING EDUCATIONAL EXPERIENCES,** AS WELL ADDED CAPABILITY IN HIGH TECHNOLOGY AND *COMPUTERS.*

-ASSISTANCE WITH INFORMATION ABOUT HIGHER EDUCATION OPPORTUNITIES AND MEANS AND RESOURCES TO ACCESS IT.

LEARNING OBJECTIVES BY GRADE LEVEL FOR M.E.S.A. PROGRAM

It is important to segment and adjust the curriculum requirements for the different grade levels of students. This includes higher difficulty levels of assignments and mastery, supportive services to other students and programs of community service. The different grade levels also have certain specified program objectives which includes the following:

Freshman Students 1st-year students:

-Goal setting -Career Development (In general)
-Study skills (In general)
-Educational Planning (short-term)
-Tutoring services -Student/Development
-Problem Solving -Program Commitment
-Awareness of advanced placement/Honors programs

Sophomores, second-year students:
-Educational planning (Longer-term)
-Career Development (more-in-depth)
-Critical thinking (career exploration)
-P.S.A.T. study skills (test-taking)
-Study skills (with more depth and specifics)
-"Master Student" textbook usage
-Educational planning (In greater depth)
-Tutoring services (Providing and receiving)
-Summer Pre-college programs and examinations
-Visitations to colleges and universities
-Summer Pre-college bridge programs
-Understanding college programs, requirements, Expenses, and content.
-Leadership development activities
-Input into M.E.S.A. enhancement and program and curriculum
-Analysis of test scores implications and meaning

Juniors, third-year students:

-Scholarships and Financial Aid for college(writing to colleges).
-Taking the college entrance examinations.
Educational enhancements/advanced placement examinations.
-College orientations
-Summer Pre-college Bridge programs
-Mathematics
-Business
-Engineering
-Working with at-risk students and assisting M.E.S.A. students.
-Summer courses, seminars or workshops -Etc.

Seniors,fourth-year students:

-Application for college
-Financial Aid application
-Scholarship application
-Educational overview and planning
-Selecting a major
-Writing the personal statement
-Taking the college entrance examinations
-Transition into becoming a college student

CURRICULUM REQUIREMENTS AND CONTENT
MATHEMATICS, ENGINEERING, SCIENCE AND ACHIEVEMENT
SPRING 1991

PROGRAM PROFILE

The Mathematics, Engineering, Science, and Achievement Program is intended to develop minority students to have all of the pre-college skills necessary to assure the successful completion of college requirements for a baccalaureate degree. The students are expected to fulfill various set program requirements and achieve/master stated abilities and knowledge in their high school years that will prepare them for college. In essence, the Program will assure a strong well-rounded educational foundation with academic strengths and abilities in math, science and English, the foundation for educational success in any higher education major, especially in those college programs where there is a math-based requirement.

CURRICULUM REQUIREMENTS

The requirements for individual students are based on the educational level of the students, which can be freshman, sophomore, juniors and seniors in high school. There are varying degrees of difficulty and content requirements which students are expected to complete and master. There is an emphasis to achieving educational success in all classes, a minimum grade average, with an added emphasis for math, science and English Classes, which is a requirement for participation in the M.E.S.A. Program/Class. Students are enrolled in the M.E.S.A. class with which has a structured curriculum and high school credit/units applicable towards high school graduation.

Curriculum content for the program includes the following General Categories:

-Book Reviews -Computer Literacy
-Vocabulary Development -Time Management
-Critical Thinking:
  -Judgement -Propaganda
  -Perception -Logical arguments
-Reaction to information creativity/innovation
-Memory Techniques/Strategies
-Leadership Development
-Reading Effectiveness Techniques
  -Note-taking -Test-taking
-Communications -Interpersonal Communications
-Finances/Budgets, Economy
-RESEARCH AND TERM PAPERS
-How to Utilizes Resources for Student Development
-Engineering-Related Projects:
-Egg-drop
-Physics projects
-Orienteering/Direction/Distance
-Kites/Gliders (flight aeronautical)
-Bridge Building
-Cause and Effect Projects
-Goal-Setting
-College Application and Selection
-Cultural Development/Understanding
-Scientific Problem solving
-Career Development
-Community Service

-Technology role in society
-Connection Between:
-Health Education
-Social
-Physical
-Must Align Theory and Application
-Emotional -Academic
-In depth Rather Than Complete Coverage of Material
-Parenting, Living skills, Human Relations, Conflict Resolution, values Clarification
-Aesthetic Education, Art, Drama, and Music
-Also Moral Education (honesty, work ethics and attitudes)
-Major Areas In All Subjects Should Be:
-Thinking skills
-Organizational strategies
-Daily living function for a healthy life

The M.E.S.A. Program is a student-centered and interdisciplinary program intended to support the academic pre-college program and coursework which students are enrolled in during their high school years. It is intended to foster excellence and high academic achievement for all enrolled students. Academic preparation for college is fostered in the various **Basic Academic Subjects**, which includes the following educational objectives:

READING ABILITIES:

-Identify and comprehend the main and subordinate ideas in written work, and to summarize the ideas in one's own words.

-Recognize different purposes and methods of writing, to identify a writer's point of view, tone, and to interpret a writer's meaning inferentially and literally.

-Separate and vary personal opinions and assumptions from a writer.

-Reading speed and methods (survey, skim, review and question, and master according to the type of material and one's purpose for reading.)

-Use books and other reference material features, such as table of contents, preface, introduction, titles and sub-titles, index, glossary, appendix, and bibliography.
-Define unfamiliar words by decoding, using contextual clause, or by using a dictionary.

WRITING SKILLS AND ABILITIES:

-Conceive ideas about a topic for the purpose of writing. Organize and select ideas, and be able to outline and develop them in a coherent paragraphs.
-Write standard English sentences with correct:
-Sentence structure -Verb forms
-Punctuation -Capitalization
-Possessives -Plural
-Forms -Other forms of writing
-Vocabulary -Spelling
-Vary writing style, including vocabulary and sentence structure for different reader's purposes.
-Improve writing by restructuring, correcting errors and rewriting.
-Gather Information from primary and secondary sources; to write a report utilizing research. Also, to be able to quote, paraphrase, and summarize accurately. Must be able to cite sources of research properly.

SPEAKING AND LISTENING SKILLS AND ABILITIES:

-Engage critically and constructively in the exchange of ideas, especially during class discussions and conferences with instructors.
-Answer and ask questions coherently and concisely, and be able to follow spoken instructions.
-Identify and comprehend the main and subordinate ideas in lectures and discussions. Be able to report or interpret accurately what others have said.
-Conceive and develop ideas about topics for the purpose of speaking to a group. Be able to organize related ideas and present them clearly in standard English, as well as have the ability to evaluate similar presentations by others.
-Dominate the use of the spoken language to suit different situations.

MATHEMATICS AND COMPUTATION SKILLS:

-Perform with reasonable accuracy the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals, and integers.
-Effectively use mathematical factors: integers, fractions, and decimals ratios, proportions, and percentages roots and powers

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-Algebra and geometry
Make estimates and approximations, and judge the reasonableness of a result.
-Formulate and solve a problem in mathematical terms.
-Select and use appropriate approaches and tools in solving problems (mental computation, trial and error, paper and pencil techniques, calculator and computer).
-Use elementary concepts of probability and statistics.

REASONING-LOGIC-CRITICAL THINKING:

-Identify and formulate problems, propose and evaluate ways to solve them.
-Recognize and use inductive and deductive reasoning, and to recognize fallacies in reasoning.
-Draw reasonable conclusions from information found in various sources, whether written, spoken, or displayed in tables graphs, and to defend conclusions rationally.
-Comprehend, develop, and use concepts and generalizations.
-Distinguish between fact and opinion.

COMPUTER COMPETENCY: AN EMERGING NEED

A revolution in communications and information technology is making the computer a basic tool for acquiring knowledge, organizing systems, and solving problems. As such, it is having a profound influence on learning and in the business world.

In the immediate future most workers either will work directly with computers or have their work influenced by computers in some significant way. An influence as pervasive as this requires, among other things, an informed citizenry that not only understands what computers can and cannot do, and are aware of the problems and issues involved with their use. In schools and colleges, the computer is being used increasingly by students and their teachers as an instrument to receive, organize, store, analyze and interpret information, as well as a vehicle in the communication of such information. Competency in its use is emerging as a basic skill complimenting other skills, such as reading, writing, mathematics, and reasoning. Computers also provide access to bodies of knowledge in each of the academic disciplines. Computer knowledge is basic when trying to understand the full range of procedures that may be applied in organizing information and solving problems in fields as diverse as mathematics, science, the social sciences, business, industry, language, and art. Computers have application in the study of writing, literature, art, music, and dance have highlighted its potential as a creative tool in these and other fields.

For the stated reasons, students entering college will profit from the following preparation in computer knowledge:

-Basic knowledge of computer operation and terminology.
-Some ability to use the computer and appropriate software for:
 -Self-instruction
 -Collection and retrieval of information
 -Word processing (including the development of keyboard, composition, and editing skills)
 -Modeling, simulations, and decision making
 -Problem solving through the use of existing program and experience in developing program.
-Awareness of when and how computers may be used in the academic disciplines, various fields of business, industry, and in daily life.
-Understanding of the problems and issues confronting individuals and society in general in the use of computers including the social and economic effects of computers and the ethics involved in their use.

IMPLEMENTING THE CURRICULUM

The entire school year is utilized to implement all of the M.E.S.A. Program requirements and activities related to the development of the students. activities do vary slightly from CENTER TO CENTER (high school site). However, the following breakdown of content/activities will delineate how the objectives of the Program are implemented and achieved:

First Week:
-M.E.S.A. PROGRAM overview and regulations
-Word Processing/how to use a computer
-Study skills and processes:
-Ideas are tools -"be here now",attending
-Understand problems/obstacles and how to overcome them

Second Week:
-Careers in engineering and science, etc.
-Study skills and processes:
-Understanding what you read/comprehension
-Test on study skills and processes
-Study skills and processes:
-Improving techniques on notetaking
-Study skills and processes:
-Special techniques on taking tests
-Reducing test anxiety
-Physics/vital capacity (volume)

Third Week:
-Study skills and processes:
-Learning techniques on creativity/concentration and perseverance, solving math/science problems
-Study skills and processes:
-Relaxation exercises for better learning
-Learning to develop relationships between words/ vocabulary development & mastery
-Study skills and processes:
-Problem solving process
-Health/understanding the importance of good health and becoming a successful student
-Study skills and processes:
-Financial management/budgeting resources
-Balancing work schedule with academic demands
-Critical essays of books/paragraphs and statements
-Vocational literature and information and academics

Fourth Week:
-Continuation of Critiques/critical essays/analysis
-Communication for effectiveness and results
-Impromptu speeches/oral presentations
-Physical Science/Bridge Construction
-Word processing/producing documents

Fifth Week:
-Developing an oral presentation for salesmanship
-Organizing a sales presentation
-Making sales presentation/verbal
-Examination on communication material/information
-Career focus on science
-Critical thinking

Sixth Week:
-Memorization techniques/strategies
-Making presentations for visual effect/objective
-Examination on memory devices college presentation University of Arizona

Seventh Week:
-Goal Setting Discussion and lecture
-Writing short and long-term goals

Eighth Week:
-Note-taking discussion and lecture/film
-Recall/memorization exercise
-Analysis of film observations/learning
-Physics exercise
-Career focus continuation in mathematics

Ninth Week:
-More note-taking exercises
-Examinations
-Directions and distances/orienteering
-College information NAU

Tenth Week:
-Field trip
-Orienteering activity
-Speaker
-Book report

Eleventh Week:
-How to ORGANIZE
-Word games/exercises/deductive and inductive reasoning
-Discussion on organization
-CAUSE AND EFFECT EXERCISE AND ACTIVITY
-Examination

Twelfth Week:
-Organization activities
-How tests are constructed
-College information Glendale Community College
-Library assignment

Thirteenth Week:
-Cultural Awareness Week/Ethnic identification
-Physics exercise
-Progress reports discussion and updates and personal consultations
-critique

Fourteenth Week:
-Logic/critical thinking
-PSAT/ACT/SAT preparation
-Aerodynamics exercise
-Career focus-Science
-Science article
-Field trip Grand Canyon University
-Book report

Fifteenth Week:
-Power of the written/spoken word
-Added vocabulary development
-Word essay
-Poems
-Word exercises-examination

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Sixteenth Week:
-Word projects/Vocabulary assignments
-Test-taking discussion and lecture
-Physics exercise
-Science article
-Critical thinking
-Stress management exercise
-Vocational and cultural literacy

Seventeenth Week:
-Test-taking activities
-Examinations
-Writing assignment
-Career focus-engineering
-Library usage and exercise

Eighteenth Week:
-Review
-Semester Examinations
-Critical thinking/stress management
-Library assignment

Nineteenth Week:
-Discussion on Term Paper
-Selecting a topic for library research
-Developing a Thesis Statement
-Notecards/bibliography cards
-Project outline
-Examination

Twentieth Week:
-Writing the Body of a term paper, organizing it, setting it up, and preparing it.
-How to set up the bibliography
-Endnotes/footnotes
-Completing the rough draft of term paper

Twenty-first Week:
-Work and completing of Term Paper
-Term Paper Due

Twenty-second Week:
-Cultural literature
-Field Trip

Twenty-third Week:
-Cultural Exercises and literature
-Discussion on Music

Twenty-fourth Week:
-Cultural Literature
-Games for Learning

Twenty-fifth week:
-Classification exercises
-Random Devices
-Writing Assignment Due

Twenty-sixth week:
-How to ask questions
-Examinations

Twenty-seventh week:
-Learning Games
-Physics activity
-Kite and flight lecture
-Construct kites
-Fly Kites

Twenty-eighth Week .....SPRING BREAK.....

Twenty-ninth Week:
-Critical thinking lecture and exercises

Thirtieth Week:
-Added Vocabulary development
-Guest Speaker
-Educational planning
-Time management

Thirty-first-thirty-seventh week:
-Activities and content as related to curriculum plan and guidelines and as needed.
-Writing assignments

Thirty-eighth week:
-Semester Exams
-The end-of-year recognition awards
-educational planning and summer student development

NOTE: The DETAILED curriculum calendar is intended to serve as a general guide as to how the M.E.S.A. class is implemented throughout the school year. The faculty Advisors are always developing added activities and developing added program components. The class does have various textbooks, supplements and materials that are part of the program, such as TEXTS: "THE MASTER STUDENT", "CRITICAL THINKING", "CAREER DEVELOPMENT", SAIDLER, "VOCABULARY SERIES", "TESTSKILLS/TESTSENSE" MATERIALS FROM EDUCATIONAL TESTING SERVICES, SOFTWARE FOR THE ACT/SAT AND PSAT NATIONAL EXAMINATIONS, VIDEO ON "WHERE THERE IS A WILL THERE IS AN A", AND VARIOUS MATERIALS AND HANDOUTS PROVIDED BY THE COLLEGE SITE AND THE FACULTY ADVISOR.

ERIC CLEARINGHOUSE FOR JUNIOR COLLEGES DEC 31 1991

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